

Meeting on July 2nd 2002

Minutes taker Ina Reichel

Those present J. Corlett, I. Reichel, W. Wan, A. Wolski

Absent(excused) A. Zholents

Date July 19th 2002

Distribution

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I. Reichel
D. Robin
W. Wan
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Overview of topics

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1 Update on a design of the first bunch compressor (I. Reichel)

With the current boundary conditions (bending angle larger than 1.5 m for CSR and 30° total bending in each direction) and the available real estate it is at least very difficult to get the required R_{56} (Ina's current version still has a too small R_{56} and is likely to be already too wide to fit into the available space). One possibility could be to use the space between the pre-linac and the return line instead of between pre-linac and main linac or to make the arc between pre-linac and linac wider to have more space.

Other possibilities are using an alpha-magnet instead of the beamline or using less bending angle in which case it is even harder to get the required R_{56} without a chicane but on the other hand one has more space to put a chicane.

Ina will either come up with a beamline without a chicane or the conclusion that a chicane is necessary. She will also look into the feasibility of an alpha-magnet (might be problematic due to CSR or shielding or space requirements).

2 Details on particle tracking and sensitivity of errors (W. Wan)

The large vertical beam size before orbit correction (see left of Fig. 10 and Fig. 11) is probably due to coupling caused by large (several mm) offsets in the sextupoles but Weishi has not yet looked at the vertical dispersion.

The one “bad” seed (see Fig. 10) is due to a large orbit offset in one particular sextupole magnet. If this magnet is simply switched off (solution 2), the vertical emittance (after orbit correction with the new sextupole setting) is comparable to the one for the other seeds (see Fig. 11). For reasons not completely understood even very small offsets in this one sextupole create a large vertical emittance. One suspicion is that this is due to coupling as the phase advance from this sextupole to the next is about π . Weishi will look into it as one seed out of nine is not that small a probability for the real machine that one gets a “bad” seed.

The z-distribution after orbit correction is not influenced much by having this sextupole on (solution 1) or off (solution 2). However it is significantly larger if all sextupoles are off.

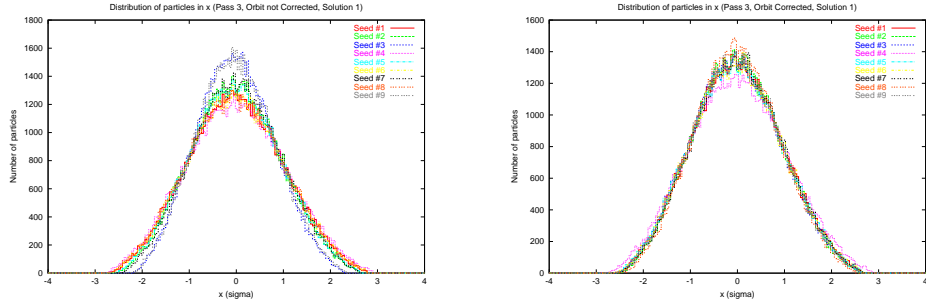


Figure 8: Tracking results: Particle distribution in x before (left) and after (right) orbit correction for sextupole solution 1.

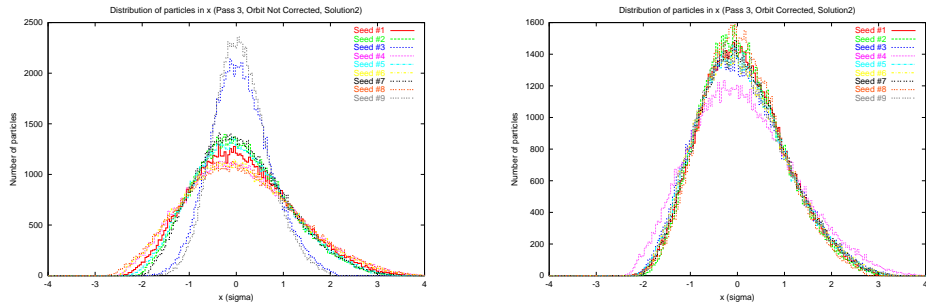


Figure 9: Tracking results: Particle distribution in x before (left) and after (right) orbit correction for sextupole solution 2.

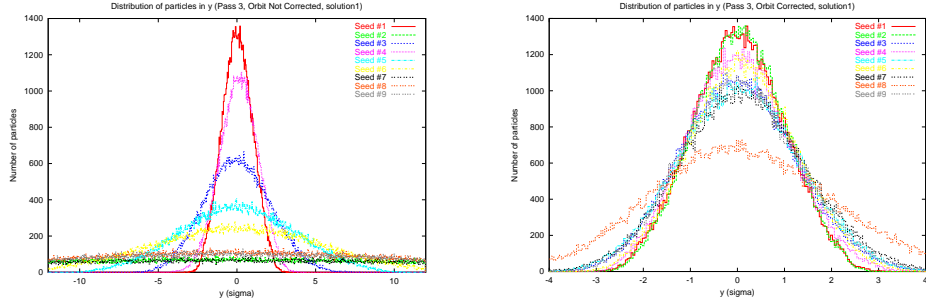


Figure 10: Tracking results: Particle distribution in y before (left) and after (right) orbit correction for sextupole solution 1.

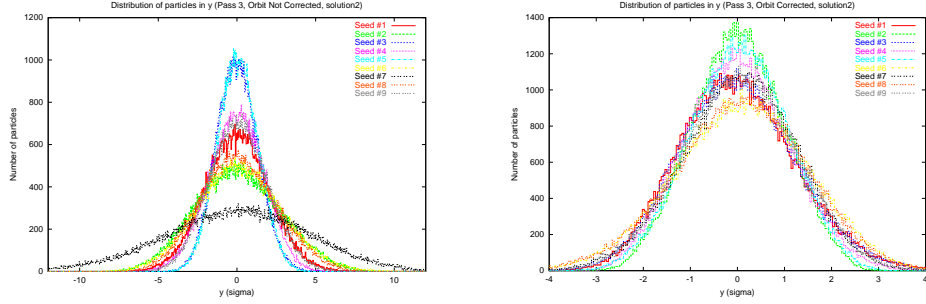


Figure 11: Tracking results: Particle distribution in y before (left) and after (right) orbit correction for sextupole solution 2.

3 Database of lattice files (I. Reichel)

We will not have to use “Intralink” after all. Currently we are looking for disk space to store the files for CVS. John suggested to put them on BC1. Ina will contact Vladimir Eberman to find out if we can use disk space there and to get everything set up if possible.

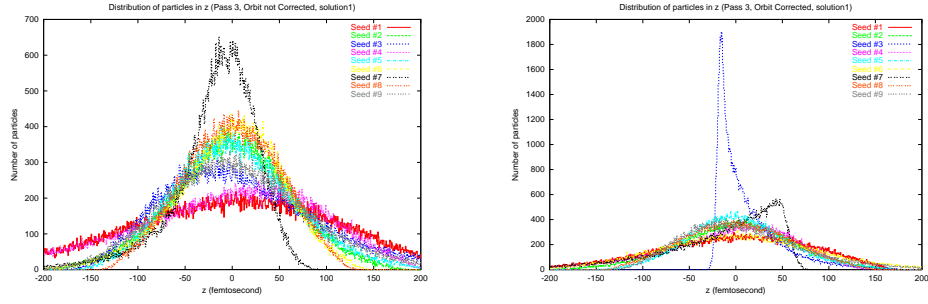


Figure 12: Tracking results: Particle distribution in z before (left) and after (right) orbit correction for sextupole solution 1.

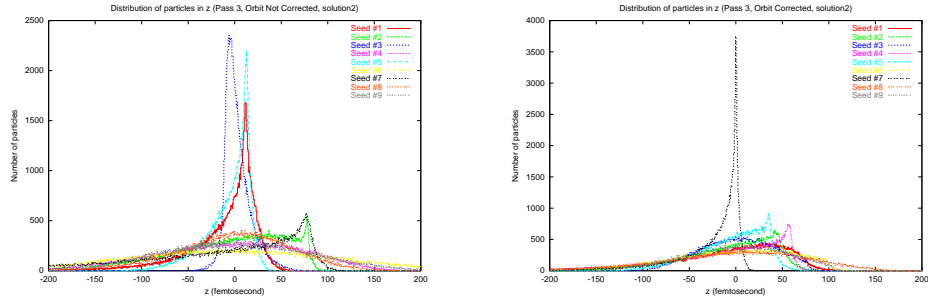


Figure 13: Tracking results: Particle distribution in z before (left) and after (right) orbit correction for sextupole solution 2.